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# Losses and wastes of the freshwater fish sector in Antananarivo, Madagascar

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Meta-Program GloFoodS (INRA-CIRAD)

## Significance of loss and wastes:

Due to global population growth, the reduction of losses and wastes is one of the major stakes for food security, environment and fight against poverty.

## Aims:

- ⇒ Identify the actors and the different stages (Fig. 2) of freshwater fish distribution in Antananarivo.
- ⇒ Quantify for each type of actor the quantity purchased, sold, stocked, losses and wastes.
- ⇒ Extrapolate these volumes to whole urban system and develop the map of fish distribution (Fig. 3).
- ⇒ Characterize quality levels of freshwater fish.



Fig. 2: Freshwater fish distribution in Antananarivo

## GloFoodS:

GloFoodS project supported by Scientific Directions of INRA and CIRAD aims to evaluate losses and wastes in 5 town (Montpellier, Chicago, Hanoi, Dakar and Antananarivo; Fig. 1) from 5 sectors (one specific sector by for each town). For Antananarivo the study object is the fish sector.

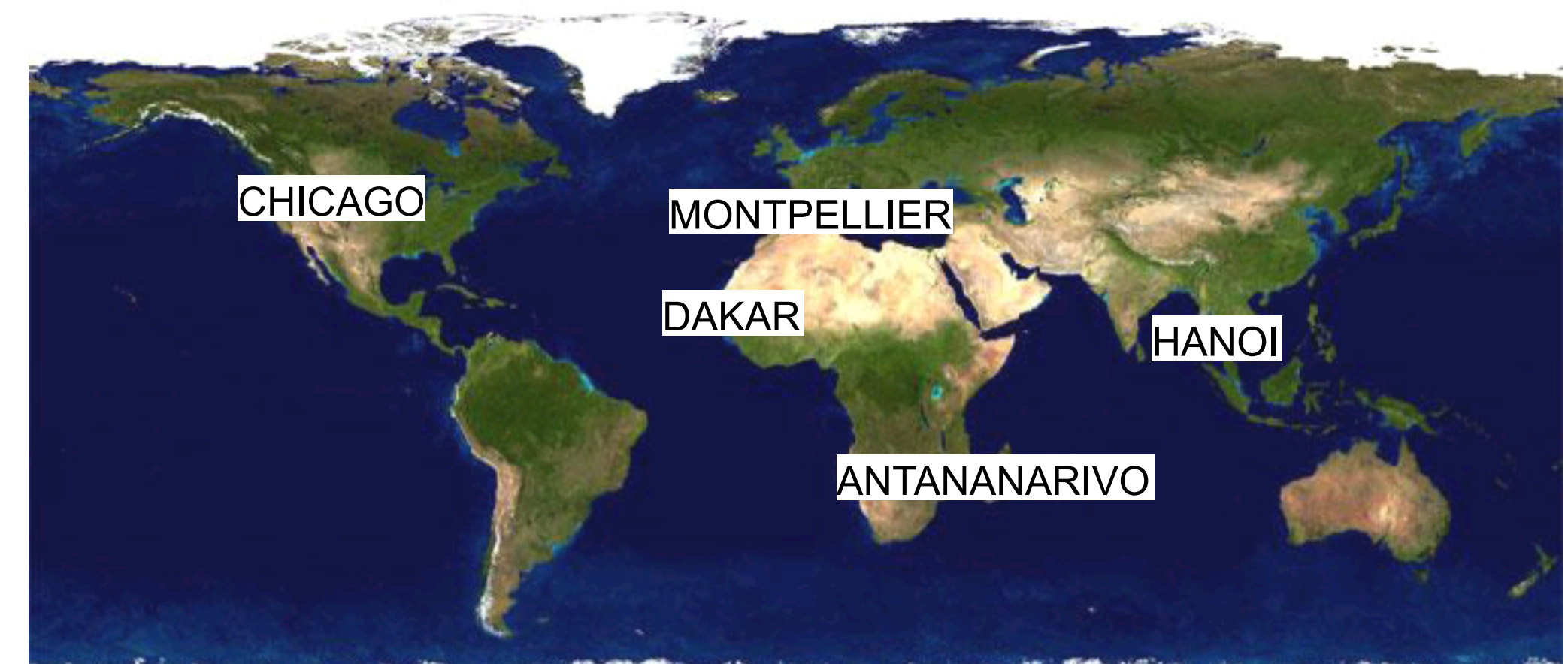


Fig. 1: Map of the GloFoodS project

## Method:

For each actor of the sector, "Material Flow Analysis" method was used to quantify the followings items:

- Input or supplied quantities bought and consumed (Fig. 4).
- Quantity of lost material during processing (not considered as losses by the actors).
- Sold quantities, losses and wastes.
- Fate of unconsumed products.

## Losses in quality and product value

### Fives ranges of quality (Fig. 5):

- ⇒ Q1: Live fish
- ⇒ Q2: Dead fresh fish
- ⇒ Q3: Unsold fish, 1 day after capture
- ⇒ Q4: Unsold fish, more than 2 days after capture, salted, dried or smoked
- ⇒ Q5: Head and bones, still consumed in Madagascar
- ⇒ Q6: Scales and viscera



Fig. 5: Ranges of fish quality

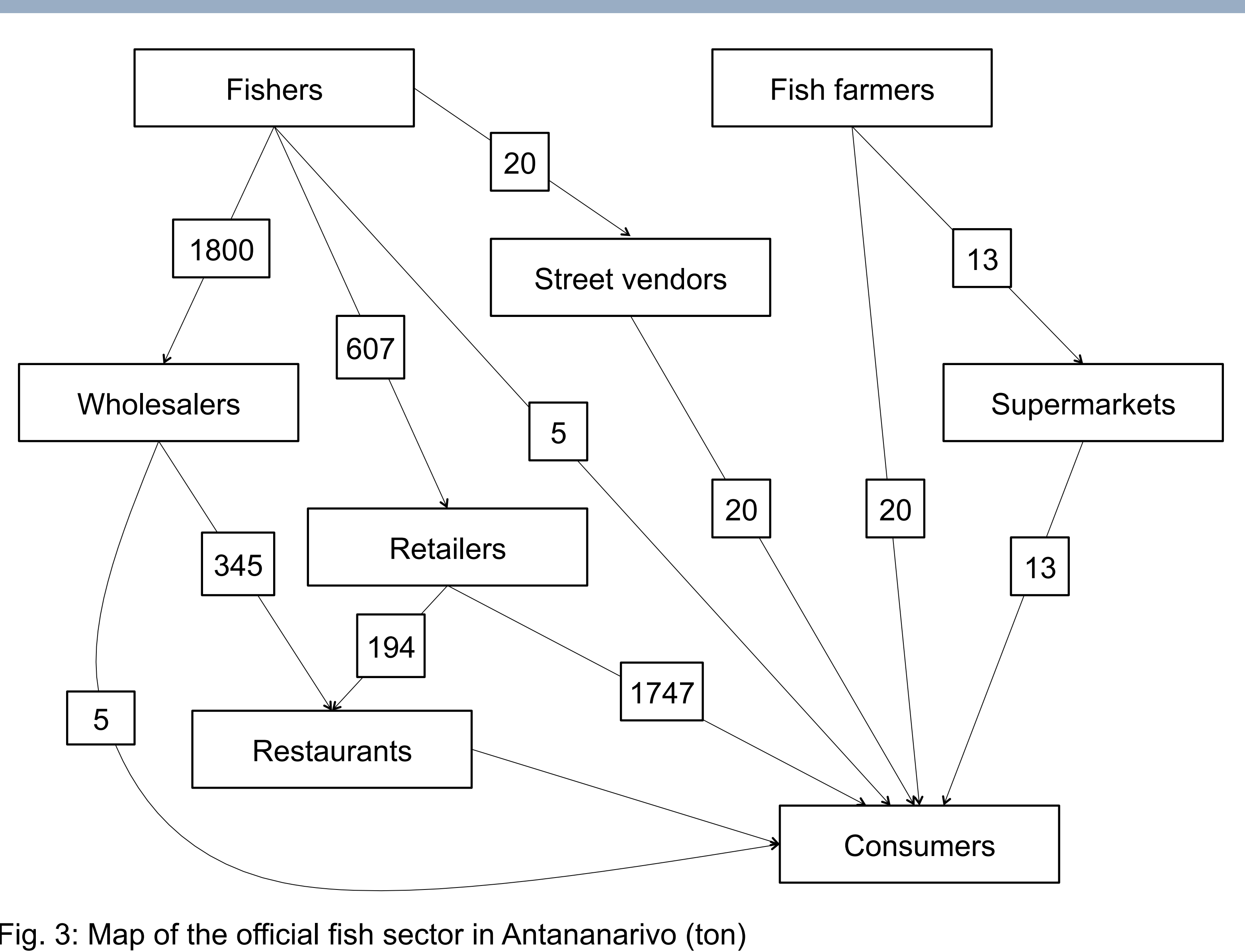


Fig. 3: Map of the official fish sector in Antananarivo (ton)

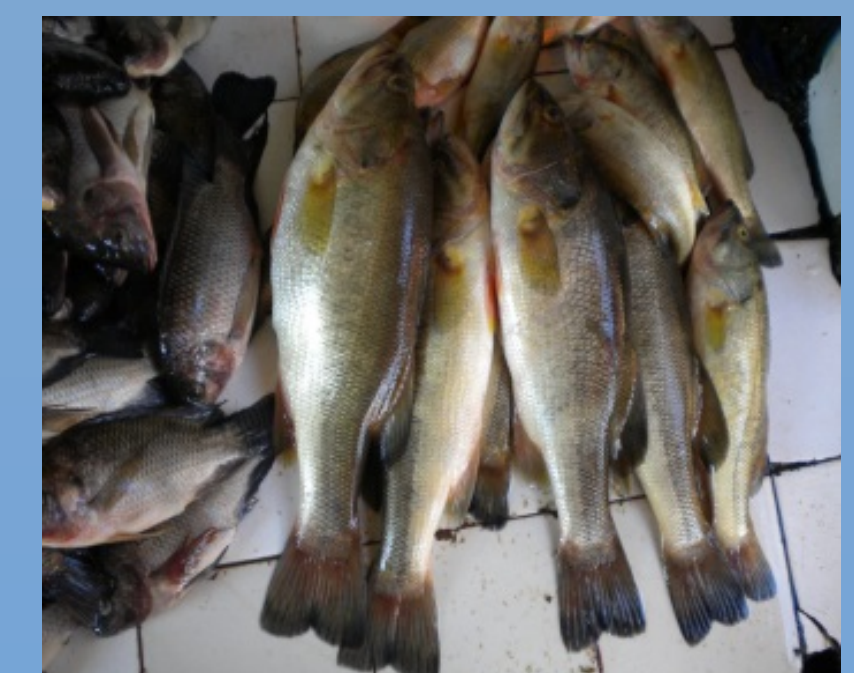


Fig. 4: Freshwater species in Antananarivo (left to right: Nile Tilapia, Common carp, Black Bass)

## Conclusion:

- ⇒ Extracted volumes from official statistics (1.3 kg/capita/yr) are weak compared to this survey (11 kg/capita/yr) suggesting high contribution of informal distribution.
- ⇒ Insignificant losses of fish products (qty) for consumers. Even Q6 are used to feed pigs.
- ⇒ Losses of quality and products value:
- ⇒ Q5+Q6: 51% of the production / Q3+Q4: 3% of the production

## Perspective:

- ⇒ Characterization of fish quality levels led to health quality improvement of fish products (HACCP and microbiology)

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